

II. NOTES ON THE GENUS *CHLORITIS*,
BECK, WITH THE DESCRIPTION OF THE
ANIMAL OF A NEW GENUS (*BURMO-
CHLORITIS*).

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(With Plate IV).

In preparing contributions to the Zoological Results of the Abor Expedition my attention has been called to genera of the Helicidae, and I have come across in my collection of spirit specimens several species of much interest as regards the classification of the Land Mollusca. In this paper I take the genus *Chloritis* and species appertaining to it, and here I must not miss the opportunity of mentioning the work of Henry A. Pilsbry, who has done so much towards our knowledge of very many families and offer him my thanks for the assistance his work has been to me.

The genus *Chloritis* was created in 1837 by Beck; in 1847 Gray took as the type of it *Helix unguina*, Linn., and is followed in "Die Heliceen," pp. 161 and 162 (1860). This shell figured in Pilsbry's Manual of Conchology, plate 29, figs. 1, 2 and 3 is a very distinctive one in form. Apparently the animal has never been examined, and it would appear that the widening of the group to contain forms with a convex spire, unless supported by anatomical characters, was a retrograde step.

Pilsbry with very little material in spirit to deal with, did his best with the genus, and states that only two species of the typical group of *Chloritis* have been investigated anatomically, viz. *C. dinodeomorpha*, Tap. Can. and *C. leei*, Cox, the last by C. Hedley. The figures of the generative organs reproduced on pl. 28, fig. 10 and pl. 32, fig. 42, respectively, differ very much one from the other, so much so that the two species can hardly fall into the same genus.

Pilsbry very truly has said (p. 122) with regard to conflicting opinion as to generic value in this widely distributed group of the Helicidae: "Controversy respecting the generic position of certain species known by the shells alone is idle, for the anatomy only can give a true answer to our questioning."

***Burmochloritis kengtungensis*, n. gen., n. sp.**

Locality.—Hills north of Kengtung State, S. Shan States (Col. R. G. Woodthorpe, R.E.); four specimens were obtained.

Shell deeply umbilicated, conoid; sculpture, hair scars visible on 3rd whorl arranged in oblique lines; surface under high power

rather rough, the first three whorls finely and transversely striate, becoming regularly ribbed on the two last, this ribbing is indistinct on basal side. Colour deep ochraceous, with a narrow ruddy brown band, just above the periphery. Spire moderately conoid, apex blunt. Suture impressed. Whorls $5\frac{1}{2}$, rounded on the periphery. Aperture semilunate. Peristome white, sinuate above, near upper inner angle, thickened and reflected, a callous on the parietal wall, columellar margin oblique.

Sizes.—Major diameter 32.0; alt. axis 16 mm.

I at first took this species to be *C. theobaldi* of Gude, originally described and figured in Pro. Malac. Soc. 1914, p. 55, also in Fauna British India, 1914, p. 177, but on my recently comparing it with the type specimen in the British Museum, although a close ally, it differs in several characters, being much larger, differently sculptured, and having the peristome sinuate. It comes from the eastern side of the Shan States.

Colonel R. G. Woodthorpe made a very fine collection of land mollusca on the Siam boundary when he was laying it down, and among the species preserved in spirit this is one and I am able to describe the animal.

Foot extremely long, extending to a very fine point: right dorsal lobe small, the left inconspicuous in two small lobes (fig. 1); visceral sac closely mottled with black. The generative organs (figs. 2 and 3) are complicated, the penis elongate and much coiled from the generative aperture to the retractor muscle which is close to a very sharp bend (*p*) at the end of the sheath, epiphallus (*ep*) very long and an extremely long flagellum (*f*). The vas deferens is also of great length. The spermatheca rises from the free oviduct, has one sharp bend, and towards the albumen gland its duct is imbedded in the oviduct, terminating in a globose sac as dotted in the figure; this was seen in course of dissection but got broken off. The free oviduct opens into an ample atrium (*a*) with strongly plicate internal walls (fig. 4).

Close above the atrium and opening into it there is an oblong somewhat flattened sac (fig. 6) with leathery walls, the distal end produced into a short cylindrical tube, which is retractile. On cutting this open upon the dotted line (in fig. 6) a cylindrical dart was disclosed, having a spiral structure, but soft and leathery, not as usually calcareous; along the side of this dart sac (fig. 7) there are numerous strong muscles (*m*), many of which have their attachment on the side of the body wall. The radula (fig. 9) differs from all described by Pilsbry in this group, the teeth are all plain straight sided from the central to margin, the laterals becoming narrower and longer and but slightly curved; the marginals are very minute unicuspid, only the very last bicuspid. The radula is unusually long, having as many as 146 rows. Stoliczka describes that of *Trachia delibrata* to be very long with 125 rows.

The formula is 47. 9. 1. 9. 47 or 56. 1. 56.

The jaw (fig. 8) is very solid, well arched, with some 9 strong broad ribs.

The shell of this species (*Burmochloritis kengtungensis*) I have now described in detail comes very close to *Chloritis theobaldi*, Gude¹ and to *Anserina*, Theobald,² all three from the same country, the Shan States, east of the Irrawady River.

The most remarkable distinctive character in *B. kengtungensis* is the presence of a dart sac, and next the form of the teeth of the radula. With regard to the first, in the description of the genus *Chloritis* by Pilsbry (*Man. Conch.*, p. 117) we find "Genital system characterized by the lack of dart sack or other accessory organ on the female side"; with regard to the second,—Basal cusps are present on the lateral teeth (pl. 28, fig. 4).

I have already referred to the two species of which the anatomy is known, viz. *dinodcomorpha* and *leei*. Fig. 42 on plate 32 of the last-named is very interesting in connection with the anatomy of *B. kengtungensis*. On the female side a large sac is depicted much in the same position as the dart sac of the Shan States specimen; it may possibly be a dart sac, it is not alluded to in the description but I have not seen Mr. Hedley's original one and figures. The penis with the very long flagellum is wonderfully alike in the two species. Pilsbry places *C. leei*, Cox, in the group of *C. eustoma*, Pfr. I must here note the section *Sulcobasis* of Taparoni Canefri, with the type *sulcosa*, Pfr. (pl. 29, figs. 9, 10, shell). This in shape is not unlike that of *B. kengtungensis* and he has described another species *beatricis* and shows the central and inner lateral teeth to lack side cusps.

The characters of this Shan species differ so distinctly from those hitherto accepted for *Chloritis* I consider there are sufficient grounds for the creation of a new genus which I name *Burmochloritis*, in which I place *theobaldi* and *anserina*; should *leei* of Australia possess a dart it may possibly be included.

¹ *Faun. Brit. Ind., Moll.* 11, p. 177, fig. 81.

² *Ibid.*, p. 175.